

What is claimed are:

1. A semiconductor device comprising a heat-radiative support plate; and

first and second semiconductor elements mounted and layered on said support plate for alternate switching of said first and second semiconductor elements.

2. The semiconductor device of claim 1, wherein said first and second semiconductor elements are power semiconductor elements for sandwiching a radiating layer therebetween.

3. The semiconductor device of claim 2, wherein said first and second semiconductor elements are electrically connected to each other through said radiating layer.

4. A semiconductor device comprising a heat-radiative support plate;

a first stack which has first and second semiconductor elements layered and mounted in turn on said support plate;

a second stack which has third and fourth semiconductor elements layered and mounted in turn on said support plate;

wherein said first and second semiconductor elements of the first stack and said third and fourth semiconductor elements of the second stack contribute to form a H-type bridge circuit;

each of said first to fourth semiconductor elements has a switching element; and

said first and fourth semiconductor elements and said second and third semiconductor elements are alternately switched.

5. The semiconductor device of claim 4, wherein one of said first and second semiconductor elements in the first stack and one of third and fourth semiconductor elements in the second stack form a switch of high voltage side in the H-type bridge circuit;

the other of said first and second semiconductor elements in the first stack and the other of third and fourth semiconductor elements in the second stack form another switch of low voltage side in the H-type bridge circuit.

6. The semiconductor device of claim 4 or 5, further comprising first and second radiating layers mounted respectively between said first and second semiconductor elements in the first stack and between said third and fourth semiconductor elements in the second stack.

7. The semiconductor device of any one of claims 4 to 6, further comprising a control circuit mounted on said support plate for controlling the switching operation of said first to fourth semiconductor elements.

8. A semiconductor device comprising a heat-radiative support plate;

first and second power semiconductor elements layered and mounted in turn on said support plate; and

a radiating layer mounted between said first and second power semiconductor elements;

each of said first and second semiconductor elements having a switching element;

said first and second semiconductor elements being connected to each other through said radiating layer.

9. A semiconductor device comprising a heat-radiative support plate;

a first power semiconductor stack which has first and second power semiconductor elements layered and mounted in turn on said support plate;

a second power semiconductor stack which has third and fourth power semiconductor elements layered and mounted in turn on said support plate;

wherein each of said first, second, third and fourth semiconductor elements has a switching element;

a first radiating layer mounted between said first and second semiconductor elements, and a second radiating layer mounted between said third and fourth semiconductor elements;

wherein said first and second semiconductor elements are connected to each other through said first radiating layer; and

said third and fourth semiconductor elements are connected to each other through said second radiating layer.